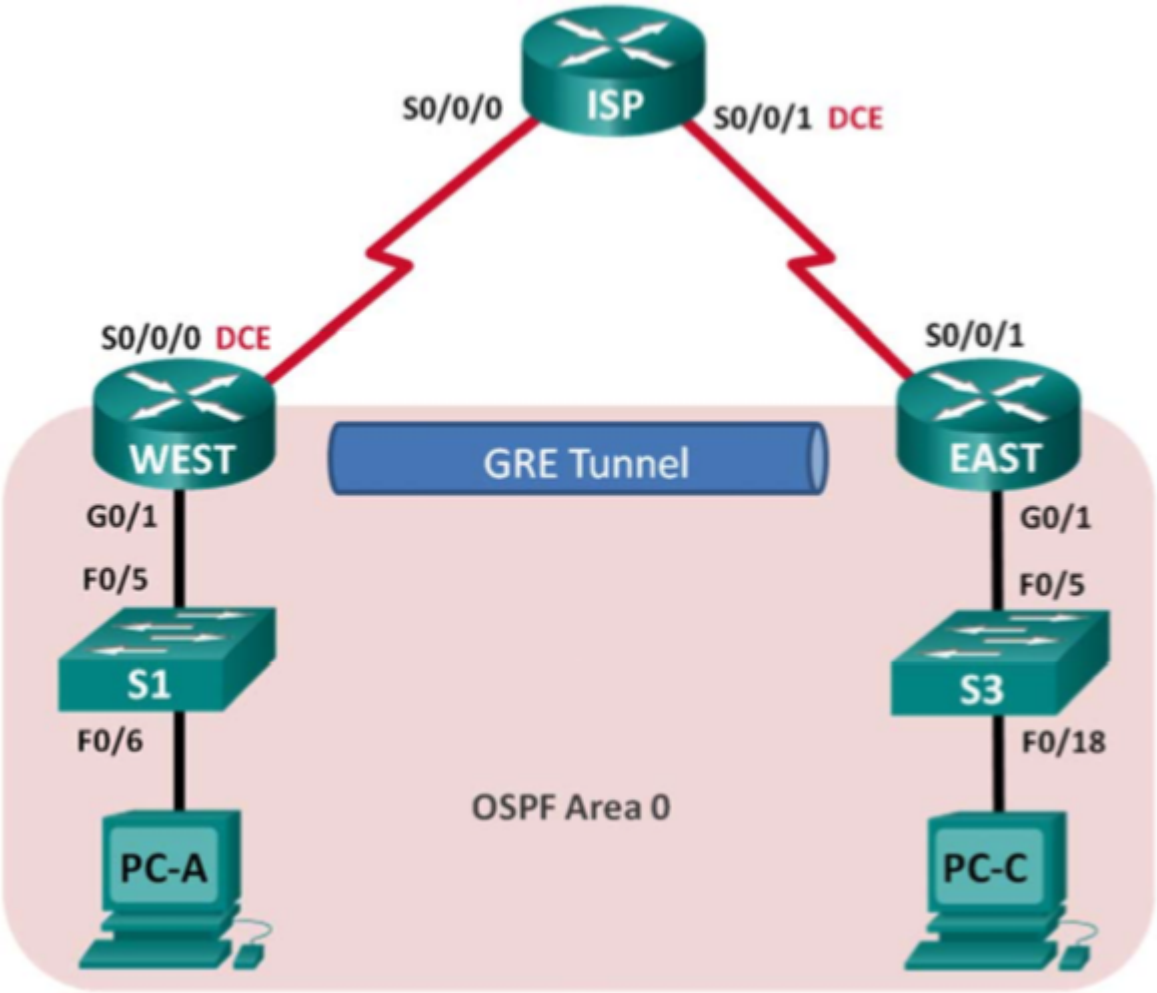
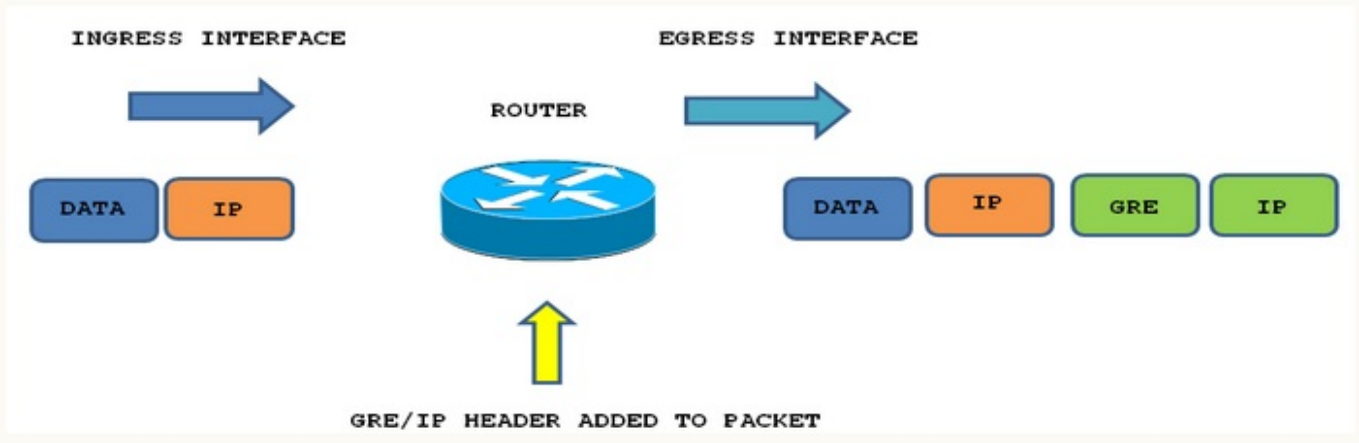
Point-to-Point GRE VPN Tunnel

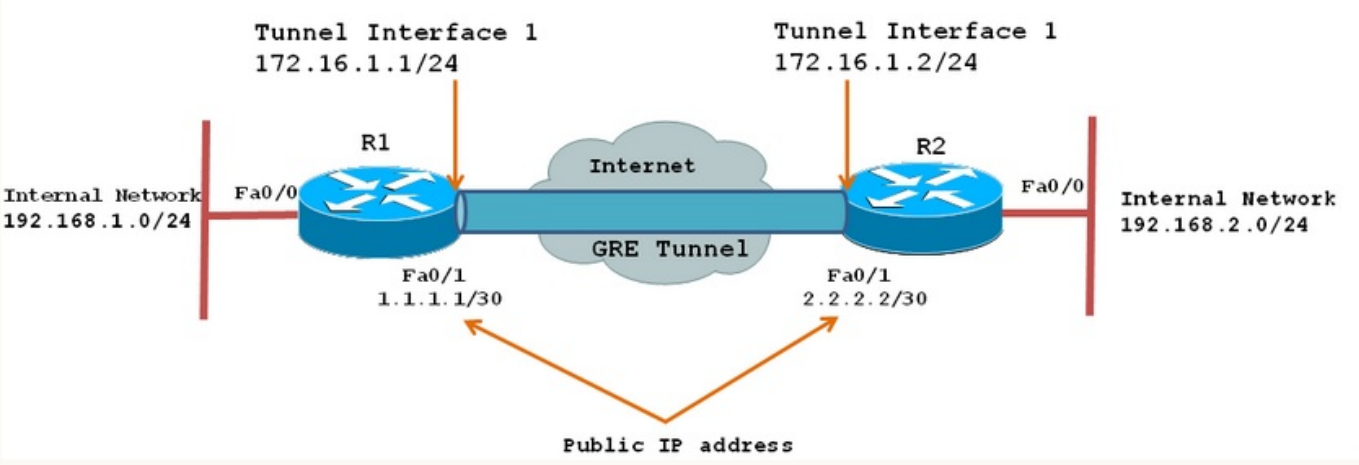
{% hint style="info" %} https://community.cisco.com/t5/networking-documents/how-to-configure-a-gre-tunnel/ta-p/3131970 {% endhint %}



Tunneling provides a mechanism to transport packets of one protocol within another protocol. The protocol that is carried is called as the passenger protocol, and the protocol that is used for carrying the passenger protocol is called as the transport protocol. Generic Routing Encapsulation (GRE) is one of the available tunneling mechanisms which uses IP as the transport protocol and can be used for carrying many different passenger protocols. The tunnels behave as virtual point-to-point links that have two endpoints identified by the tunnel source and tunnel destination addresses at each endpoint.

The below diagram shows encapsulation process of GRE packet as it traversers the router and enters the tunnel interface:





Configure default routes to the ISP router.

```
WEST(config)# ip route 0.0.0.0 0.0.0.0 <IP ADD S0/0/0>
EAST(config)# ip route 0.0.0.0 0.0.0.0 <IP ADD S0/0/1>
```

Configure the GRE tunnel interface.

```
R1(config)# interface Tunnel 0
R1(config-if)# ip address 172.16.1.1 255.255.255.0
R1(config-if)# tunnel source 1.1.1.1
R1(config-if)# tunnel destination 2.2.2.2
```

```
R2(config)# interface Tunnel 0
R2(config-if)# ip address 172.16.1.2 255.255.255.0
R2(config-if)# tunnel source 2.2.2.2
R2(config-if)# tunnel destination 1.1.1.1
```

Verify that the GRE tunnel is functional.

```
show ip interface brief
```

Enable Routing over the GRE Tunnel

Configure OSPF routing for area 0 over the tunnel.

```
R1(config)# router ospf 1
R1(config-router)# network 172.16.1.0 0.0.0.255 area 0
R1(config-router)# network 172.16.12.0 0.0.0.3 area 0
```

```
R2(config)# router ospf 1
R2(config-router)# network 172.16.2.0 0.0.0.255 area 0
R2(config-router)# network 172.16.12.0 0.0.0.3 area 0
```